

## **SILVER CREEK**

*Heath Township  
Allegan County (T4N, R14W, Sections 34, 35)  
and (T3N, R14W, Sections 2, 3, 11)  
Surveyed August 6 and 8, 1991*

**James L. Dexter, Jr.**

### **Environment**

Silver Creek is a small, second-order tributary to the Little Rabbit River in north-central Allegan County. It is a designated top-quality, coldwater trout stream. Silver Creek enters the Little Rabbit River about 2 miles west of Diamond Springs. The nearest town is Hamilton, located 4 miles to the west.

Flowing through forested land, the Silver Creek watershed is practically unimpaired by man. Soils along the creek are mostly defined as Glendora Sand loams that are poorly drained. The drainage area, however, is primarily Oakville Fine Sand which is more rolling and well drained. The topography of the area is nearly level to somewhat rolling hills, which support mostly second- and third-growth hardwoods.

Silver Creek has a definite source in a spring located at T3N, R14W, Section 11. One small tributary branch joins the mainstream but this may be intermittent. The creek falls over 50 feet in its short 2.8 mile length. Discharge is estimated to average about 5 cubic feet per second. At the two stations surveyed in 1991, stream width averaged 13.9 feet and depth averaged 3.5 inches. The depth range was 0-36 inches. Fish habitat included riffles (scarce), overhanging brush, logs, pools, rootwads, and undercut banks (common to abundant, especially downstream of 134th Avenue). Overall, habitat is much better in the upper half of the creek than the lower half.

Bottom substrates in the survey sites consisted of 75% sand, 5% silt, 3% gravel, 2% clay, 2% rock and, most interestingly, 8% peat. The peat formed clumps which look just like rocks in the stream. Water quality information was collected in 1947 and 1960: dissolved oxygen was 9 ppm or higher, pH was 8.0, and alkalinity values were 97-109 ppm. Water temperature, surveyed many times, rarely exceeds 65°F.

Aquatic insects are plentiful although many areas appear sandy and sterile to the casual observer. Caddisflies, chironomids, and scuds were rated as common to abundant, while mayflies were rated as scarce to common. In 1971 it was noted that watercress grew almost completely across the creek in a 350-foot sample area upstream of 136th Avenue. However, in the 1991 survey at the same location the presence of watercress was not even noted.

Very little development has occurred in the watershed. There are scattered agricultural activities, a few shallow oil wells, and a gas storage facility. Only a few houses are in the area. The State formerly owned the land containing the upper one-third of the creek (old Allegan State Forest boundaries). That land was given to the county to administer between 1970 and 1972 due to vandalism associated with a rustic campground at 134th Avenue. This campground is now

maintained by the county, and access to the entire stream is not a problem.

### **Fishery Resource**

Silver Creek has been managed as a trout stream since at least 1936. Sporadic stocking of brook and rainbow trout occurred between 1936 and 1964. Brown trout must have been stocked at some point because their presence was noted as early as 1947. No stocking has occurred since 1964.

Stocking of catchable-size trout in the late 1950s and early 1960s contributed to a management problem on this stream. Several dams were constructed on the creek for mill, power generation, and logging operations from about 1900 to 1925. The largest dam, at 134th Avenue, impounded approximately 10 acres. This pond was one of the State's stocking sites and it attracted a large number of anglers. As the dam fell into disrepair, attempts to fix it in the mid-1960s by Fisheries and Wildlife personnel ceased due to budget restrictions. A few years later, new District fisheries personnel reasoned the dam and pond were not good for this high-quality trout stream. Repair of the dam to restore the pond subsequently turned into a fight between Fisheries DNR, the Hamilton Rod and Gun Club, State legislators, and Allegan County (which was in the process of taking over the land). The Hamilton Rod and Gun Club wanted the pond restored and stocked with big trout. The outcome was that the dam was not reconstructed, some dredging of the old pond took place to increase flow, and some habitat improvement structures were added to the area. No blueprint of the placement or type of structures could be found in the files.

The earliest fishery survey on record was in 1947. This survey concentrated on two of the small ponds and utilized a combination of experimental gill net and common-sense minnow seine. Species collected included brook and brown trout, creek chub, central mudminnow, and chubsuckers. In 1954 and 1960, limited surveys at two sites utilized a DC stream electroshocker. Species sampled included brook and brown trout, mottled sculpin, mudminnow, creek chub, blacknose dace, johnny and rainbow darter, white sucker, black bullhead, and American brook lamprey (larvae). Only trout and sculpin were abundant. Additional species collected during surveys in the 1970's and 1980's included green sunfish, grass pickerel, and brook stickleback. None of these were ever represented by more than a few specimens. Although rainbow trout were stocked in 1943, 1944, and 1960, none were collected until 1984. Brown trout were represented in every sample, although no stocking record can be found.

The 1991 fish survey used a DC backpack electroshocker at two stations located at 134th and 136th avenues. They had an average length of 950 feet. Mark-and-recapture population estimates were conducted at both sites.

The fishery available today in Silver Creek is somewhat different from that of 50 years ago (Table 1). Brown trout have practically disappeared from the stream. The majority of trout biomass is comprised of brook trout, but rainbow trout are numerically dominant. Competition from other species is negligible.

Steelhead spawning is very successful in Silver Creek. Rainbows were collected from 2.0 to 8.0 inches in length ([Figure 1](#)). Recruitment appears good, and the stream is capable of producing a fair number of steelhead smolts for its size. Pooled population estimates for the two sites indicate an average rainbow population of 736 fish/acre (27.7 pounds/acre). Age group estimates indicate the stream is capable of producing about 1,730 age I steelhead in August. The area around 134th Avenue greatly outproduces the 136th Avenue area.

Brook trout were collected from 1 to 14 inches in length. Over 11% of the collection was of legal size. This species provides the vast majority of the angling opportunity. Recruitment appears good ([Figure 2](#)), although electroshocking efficiency was poor (31.8% at 134th Avenue, 61.2% at 136th Avenue). The average population estimate was 260 brook trout per acre (17.4 lbs/acre). Once again the 134th Avenue site outproduced the 136th Avenue site.

Growth rates of brook and rainbow trout in Silver Creek are very good. All brook trout age groups are growing well above the State average (Table 2). Rainbow trout age groups O and I are growing above the State average also; however the few age-II rainbows captured were growing slightly below average. All brown trout were growing very poorly. This is most likely due to environmental conditions favoring brook trout over brown trout.

The analysis of age frequency data (Table 3) leads to three interesting points. First, the ineffectiveness of the electroshocker on young-of-the-year rainbows is evident. Second, there is a large mortality (or smolting movement) of steelhead between ages I and II. Third, there is also a high apparent mortality of brook trout between ages I and II. Silver Creek most likely cannot support many larger, older trout. This creek, although narrow and short, compares very well with several other wild-trout streams in the area, such as Silver Creek in Gun Plain Township (Allegan County) and Cooper Creek in Kalamazoo County.

Table 4 compares electroshocking catch-per-hour statistics for all three trout species at the 134th Avenue site from 1954 through 1991. Although station length was not exactly duplicated, and the efficiency of the electroshocking equipment has probably changed, some trends can be seen. The abundance of brown trout has declined substantially in the last 40 years. Rainbow trout have increased in number. Brook trout appear to be holding their own, but showed high year-to-year variability, probably due to uneven recruitment. Using these data alone, the catchable-sized trout available to anglers has probably declined over the last few decades. The rainbows probably don't offer much angling opportunity because they smolt and migrate out of the stream at 7 to 10 inches. Their strong presence may be inhibiting the brown trout population.

**MANAGEMENT DIRECTION**

Silver Creek and its fishery are a very rare resource in Allegan County. There are few streams left in Southern Michigan that contain a quality, wild-trout fishery. Although the stream has enjoyed a good reputation for decades, it is not overfished.

The watershed's environmental conditions appear to have changed little in the last 50 years. Logging and further development of gas and oil wells seem to pose the only threat to the stream in the future, and neither are eminent.

Silver Creek should continue to be managed as a top-quality coldwater, designated trout, stream. Significant natural reproduction by both brook and rainbow trout, as well as some reproduction by brown trout, should continue to provide excellent angling opportunities.

No fisheries management action need be taken at this time. Continued monitoring of the stream conditions by anglers will help keep us appraised of any negative developments. Habitat improvement is not needed. There is an excessive bedload of sand in the lower reaches, however, sand is the inherent material of the basin and a sediment trap would have little effect. Our management goal into the next century should be to maintain the existing fishery and environment.

Report completed: January 1993.

**Table 1.**-Species, relative abundance, and length of fish collected by backpack electrofishing (marking run only) at two stations on Silver Creek, Heath Township, August 6, 1991. Estimated weights are given for trout only.

Common Name	Number	Percent by number	Weight (pounds)	Percent by weight	Length range (inches) <sup>1</sup>
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Rainbow trout	110	36.2	6.61	40.9	2-8
Mottled sculpin	98	32.2	---	---	1-3
Brook trout	70	23.0	7.64	47.3	1-14
Central mudminnow	16	5.3	---	---	2-4
Hybrid sunfish	5	1.7	---	---	1-2
Brown trout	4	1.3	1.91	11.8	8-14
White sucker	1	0.3	---	---	5
Total	304	100.0	16.16	100.0	

**Table 2.-**Average unweighted total length (inches) at age, and growth relative to the State average, for fish sampled from Silver Creek with backpack shocker on August 6, 1991. Number of fish aged is given in parentheses.

Species	Age					Mean growth index <sup>1</sup>
	0	I	II	III	IV	
Brook trout	3.9 (8)	7.2 (15)	10.2 (3)	---	---	+1.4
Rainbow trout	3.4 (1)	6.1 (14)	8.3 (3)	---	---	+0.9
Brown trout	---	8.8 (2)	9.3 (1)	---	---	---

<sup>1</sup>Mean growth index is the average deviation from the state average length at age.

**Table 3.-**Estimated age frequency (percent) of fish caught from Silver Creek with backpack shocker on August 6, 1991.

Species	Age					Number caught
	0	I	II	III	IV	
Brook trout	51	45	4	---	---	70
Rainbow trout	24	74	2	---	---	110
Brown trout	---	50	50	---	---	4

**Table 4.-**Catch per hour of trout with electrofishing gear from the 134th Avenue survey site over a 47-year period.

Year	Brook trout	Rainbow trout	Brown trout
1991	18.8	38.0	1.2
1984	11.5	3.4	3.4
1971	80.0	---	9.3

1960	18.0	---	45.0
1954	64.0	---	118.2

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**Last Update:** 08/05/02

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**Questions, comments and suggestions are always welcome! Send them to**  
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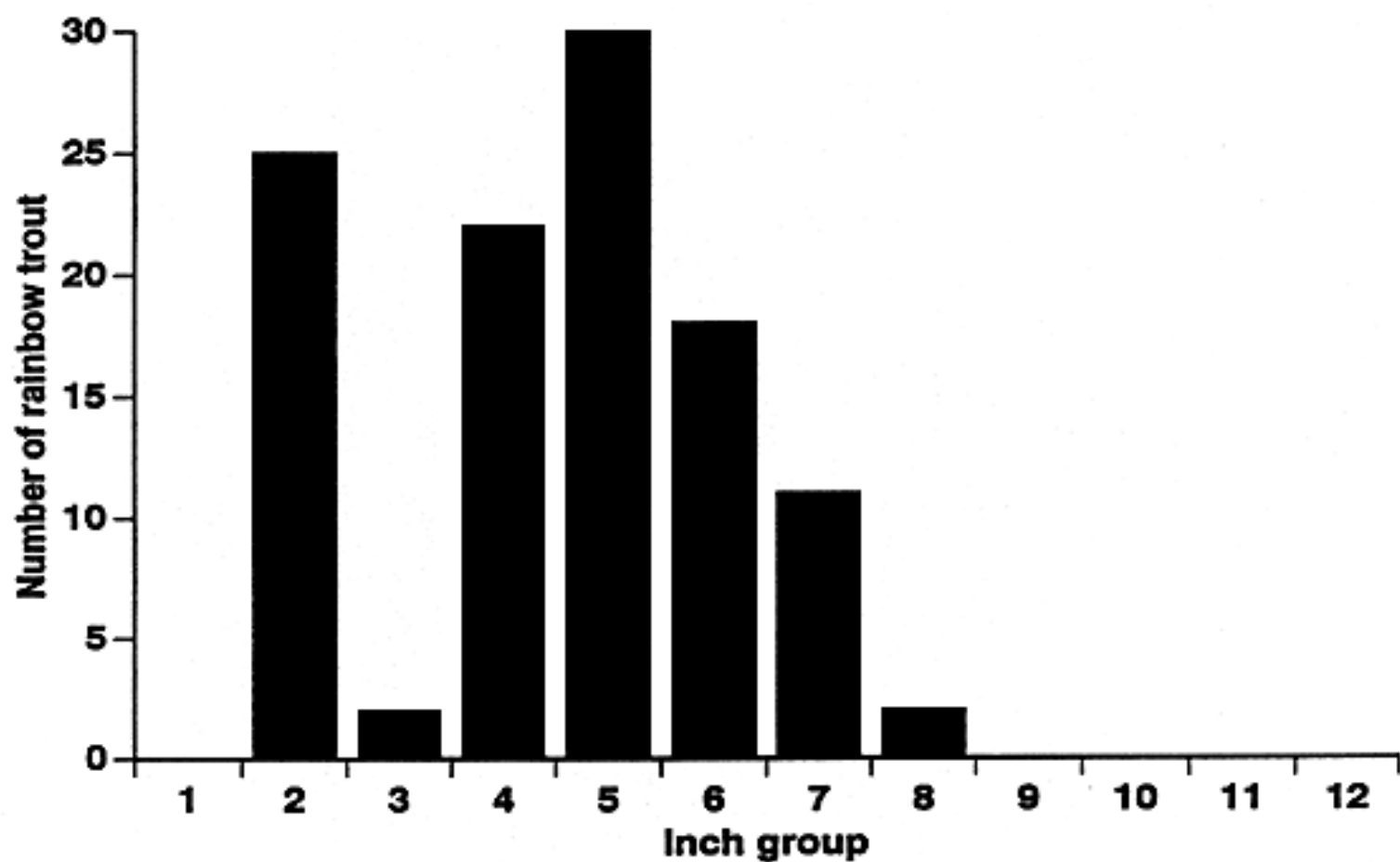


Figure 1.—Length frequency of all rainbow trout collected in the electrofishing marking runs at 134th and 136th on Silver Creek, Allegan Co., 1991.

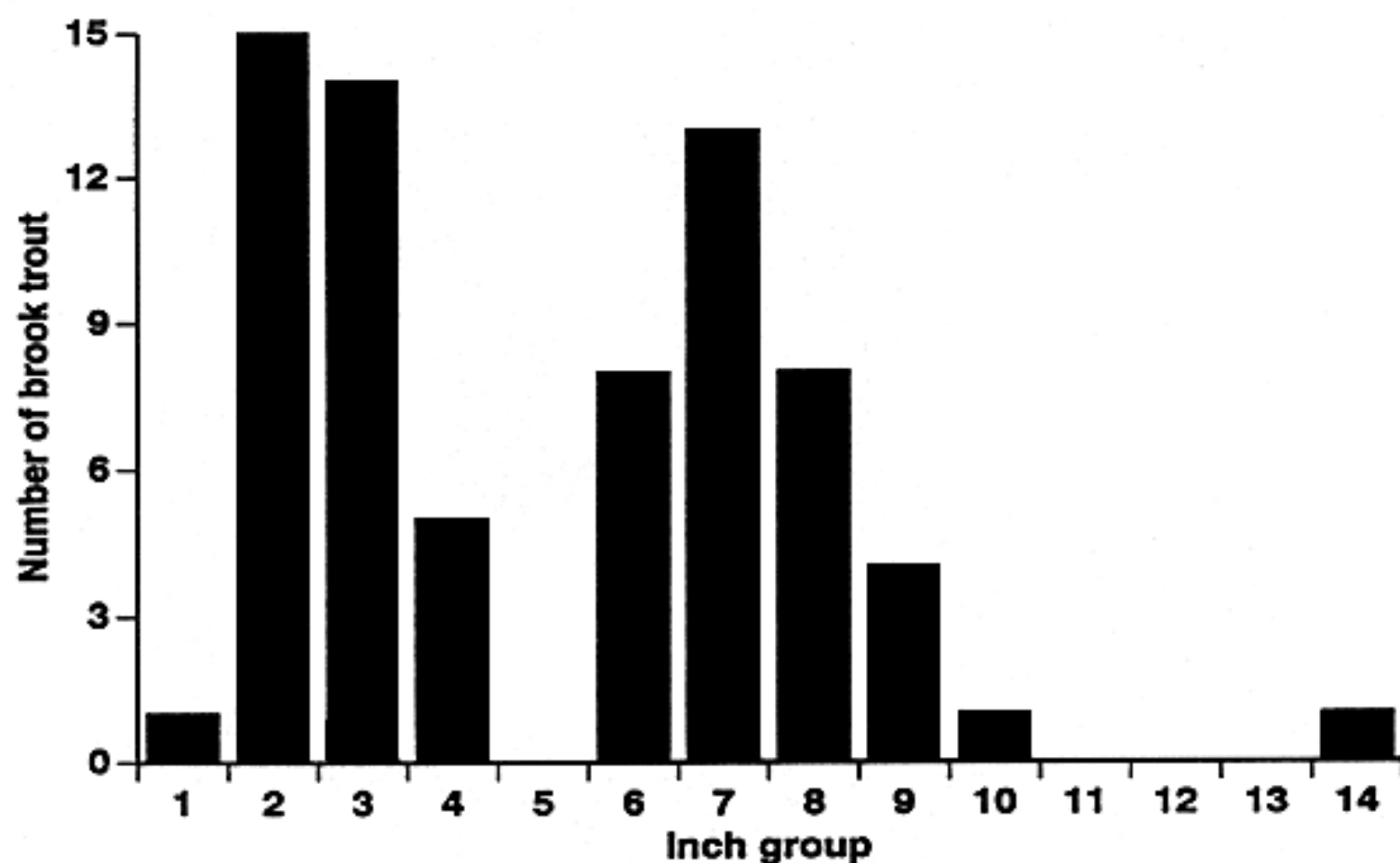


Figure 2.—Length frequency of all brook trout collected in the electrofishing marking run at 134th and 136th on Silver Creek, Allegan Co., 1991.